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Recruitment and Training Films

The more we move about the foundry industry, the more we are impressed with the notion of "what is one man's meat is another man's poison." This is the case with the series of films of American origin which is being distributed for exhibition through the Council of Ironfoundry Associations. There are fourteen films available, and whilst they are almost uniformly excellent, there do exist divergences from standard British practice. Yet, where these are pointed out intelligently, nothing but good can come from showing the films. Related to the films, there are film strips and quizzes. When showing to youngsters it is essential that the whole programme be undertaken, for it can give some surprising results. For instance, the reaction of a foundry in the East Midlands was stated in a letter which reads, "We were very satisfied with the results obtained and deem it ('Moulding with a Loose Pattern') the best instructional film we have yet used. Each apprentice present was given a notebook in which to write the answers to the quiz, and none had more than three errors. As 60 per cent. of the boys were not employed in the foundry this was remarkagly good."

It is possible that in some cases these films are being shown to the wrong audience. They are not designed for criticism by skilled men, but to teach neophytes, both old and young, some important principles underlying foundry practice. To be worthwhile, the only acceptable criticisms must be from this angle. The report emanating from the South African Branch of the Institute of British Foundrymen, when film slides of London and Sheffield origin were shown, was that they were very elementary. Yet this is a statement of the obvious, as in any other form they would fail to reach their objectives. The idea underlying the creation of the American films was, we believe, to reduce the ill effects of bottle-necks due to the dearth of skilled moulders during the late war. The effort was quite successful and raw labour was quickly trained to produce moulds of a satisfactory character.

A feature of these American films which is so commendable is the technical production. The tempo is so adjusted that the average mentality can assimilate each operation without effort. The commentator's voice is never obtrusive and not one unnecessary comment or observation is made. The photography is of a high order. Shown to an audience of beginners, and not to critics of moulding methods (which, after all, vary from shop to shop, let alone from continent to continent), we are convinced that their current popularity will long outlast any judgment based on expressions of opinion as to differences in moulding techniques. The underlying principle that visual education is fundamental to modern industrial training technique is incontrovertible. The various films and strips available are in every way meeting the requirements of the entrants to the foundry industry. The art is relatively new and critics should bear this in mind. Moreover, more than one film should be seen before evaluating the worth of the whole series. Foundry executives who have not yet shown these pictures to the juveniles in their own firms or localities are strongly advised to apply to the Secretary of the Council of Foundry Associations for an early booking.

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Group Training Centre

When the first of the Council of Ironfoundry Association's Group Training Centres was opened last year, a colour film was made of the opening ceremony and the instruction of the first students. The secretary of the Association announces that, through the courtesy of Mr. D. H. Wood, the chairman of West Midland Foundry Advisory Committee (which administers the Centre), this film will be lent to member-firms of the C.F.A. It is suggested that the film might be shown at the same time as the other foundry training films that are now being lent out. Applications for this colour film should be addressed to Mr. D. H. Wood at Titan Works, Charles Henry Street, Birmingham, 12.

Australian Linseed

Linseed is one of the newest crops to be cultivated on a commercial scale in Australia, but in view of the success of growers in the 1948 season, there are now good prospects of its assuming a permanent and important place in the country's agricultural economy. Experts have decided that any technical problems could be surmounted, but an economic difficulty remains. If a new crop is to be introduced, it is important for it to be grown by skilled and experienced farmers. These farmers are the most difficult to interest in experimental crops, because they are already growing other crops successfully. They have little incentive to change over from crops that are profitable to others that might not pay, through no fault of their own. It was clear that if linseed was to be grown in Australia under favourable conditions, by farmers likely to make a success of the job, a guaranteed price would be necessary during the experimental period of several years.

This guaranteed price was offered by Maggitt, Limited, a company using large quantities of linseed, and seed was obtained from the Federal Government and supplied by the company to growers free of cost on condition that the company had first claim on the harvest. The guaranteed price was £40 (Australian) a ton. Linseed of the "Walsh" variety was chosen, and it was decided to spread cultivation over various parts of the country. The supply of seed was limited, and in 1947, the first season of the venture, only 1,859 acreas could be sown. Results were encouraging. Growers were paid more than the guaranteed price, and received £68 a ton for pure seed with an oil content of 40 per cent., with adjustments for seed of higher or lower oil yield. The whole of the seed was reserved for sowing in the following season, and the area sown was increased in 1948 to 19,170 acres. The linseed venture, therefore, seems to have overcome its two biggest problems, proving that the crop could be grown successfully in Australia, and interesting farmers in its production. It now remains to build up supplies of seed for greater acreage until the industry is able to maintain a regular supply of seed for future sowings and also meet the growing demand for seed for processing.

A NEW HARDNESS TESTING instrument is to be manufactured by Snow, Deakin & Company, who have acquired premises at Bideford, North Devon.

Forthcoming Events

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

FEBRUARY 25.

Royal Statistical Society—Industrial Applications Section.

Birmingham Group:—"Operational Research," by A. W. Swan, at the Chamber of Commerce, 95. New Street, Birmingham, 2, at 6.30 p.m.

FEBRUARY 28.

Institution of Works Managers.

Glasgow Branch:—"The Relation between Trade Unions and Management," by J. Sullivan, at the Institution of Engineers and Shipbuilders in Scotland, Glasgow, at 7.0 p.m.

MARCH 1.

Leeds Branch:—"Industrial Efficiency," by L. C. Ord, at the Great Northern Station Hotel, Leeds, at 7.0 p.m.

The Institute of Metals.

South Wales Local Section:—Annual General Meeting and Students' Discussion at the University College, Singleton Park, Swansea, at 6.30 p.m.

Institute of British Foundrymen.

Slough Section:—Open Discussion Night—"Any Questions?" In the Lecture Theatre, High Duty Alloys, Limited, Slough, at 7.15 p.m.

MARCH 8.

Manchester Metallurgical Society.

Annual General Meeting followed by "Metallurgical Problems Involved in the Manufacture of Components for Jet Engines," by C. G. Conway, B.Sc., at the Engineers' Club, Albert Square, Manchester, at 6.30 p.m.

Institution of Production Engineers.

Wolverhampton Section:—"Colour Schemes for Factory and Machines," by S. A. Wood, at the County Technical College, Wednesbury.

MARCH 3.

Institute of Vitreous Enamellers

Midland Section:—"Fusing of Enamels," by J. A. Clarke, at the Chamber of Commerce, New Street, Birmingham, at 7.15 p.m.

Leeds Metallurgical Society

"Metallurgical Problems in the Field of Atomic Energy," by E. W. Colbeck, M.A., F.I.M., at the Chemistry Dept., The University, Leeds, 2, at 7.0 p.m.

MARCH 4.

Belfast Association of Engineers.

Annual Dinner and Social Evening. Details to be obtained from the Secretary.

MARCH 5.

The Institute of British Foundrymen.

Lancashire Branch:—"Some Further Notes on Core Shop Control," by J. J. Sheehan, B.Sc., at the Engineers' Club, Albert Square, Manchester, at 3.0 p.m.

West Riding of Yorkshire Branch:—"Problems of Contraction and Distortion in Cast Iron Castings," by E. Longden, M.I.Mech.E., at the Technical College, Bradford, at 6.30 p.m.

A New Laboratory Drying Oven

An oven which will cut laboratory drying time in half has been placed on the market by the Harry W. Dietert Company, Detroit 4, Michigan. Known as the "Speed Oven," it has a drying space 8 in. dia. and 6 in. high. The over-all height of the unit is 29 in., and the power requirements are 2,800 watts at 115 or 230 volts. A motor-driven fan forces filtered air past electric heating elements. The air temperature is thermostatically controlled at any chosen drying temperature between 60 and 175 deg. C. The heated air flowing against and past a sample in the "Speed Oven" rapidly picks up its moisture or volatile material and so dries it. A 3-in. dia. exhaust connection to atmosphere is provided so that the heated air and any obnoxious fumes may be led into an exhaust hood or duct. The "Speed Oven" saves time in the laboratory and speeds up the reporting of results to the plant.

Cores, Core-making and Core-making Materials*

By J. G. Gilbert

(*Continued from page* 137.)

Core-making for motor-cylinder work calls for great accuracy, owing to the very thin sections of metal involved. Core-boxes for this class of work usually have a large number of loose pieces, some of which have to be bedded into position in the sand, as it is not always possible to ram beneath them. Care should be taken to see that all such pieces go right home, with only the correct thickness of sand under them. The water jackets are made in crystal sand, which has been found to be the most suitable, owing to its very open texture and free-venting nature, thus allowing gas to escape quickly. This is essential, as these cores are almost surrounded by metal when the job is cast. Most of the smaller cores, such as the inlet and exhaust port cores, are made and dried in metal drying-shells, by which means it is possible to obtain such cores true to shape.

Core Drying

The best results are obtained when cores are dried at a controlled temperature, and this method is used for all the oil-sand core drying. The Acme continuous stove, which is gas fired, and fitted with thermostatic control, is run at 500 deg. F. (260 deg. C.) and takes 1 hr. 40 min. for one complete cycle. One of the advantages of this stove is the cooling chamber at the bottom, the cores discharged from the stove are cool and do not smoke or fume. All small cores are dried in this stove; the larger cores are dried on racks in a sheet-metal stove (Fig. 9), this, again, being gas fired and having thermostatic control, is operated at 250 deg. C. Core-drying time in this stove is about 3½ hours. Special drying racks are provided for use with a "Collis" truck for this stove, and while one set of racks is in the stove, another set can be placed at any convenient point for loading. Stoves which are heated by gas and are temperature controlled are a great boon, eliminating burnt or under-baked cores, which were a daily occurrence when cores were dried in the old-fashioned coke-fired stoves, where thermal control was practically an impossibility.

Core Washes

The blacking or washing-over of cores is the operation upon which the skin finish of all castings depends, with the exception of some of the lighter types of jobs, particularly those made on the machine-moulding floor. The majority of cores for the machine-moulding section are used in the un-blacked condition with fairly good results. All other cores are blacked; some require special treatment before blacking to assist them to stand up to heavy metal sections and high casting temperatures. To meet these needs, cores are given a coat of refractory wash and dried before blacking. It is surprising to note how this treatment increases resistance to metal impregnation or burn-on; it is much superior to clay or ganister washes which were used for quite a long period. The blacking, which is a prepared brand only requiring the addition of water, can be relied upon to give more consistent results than was the case when the moulders and coremakers had to mix their own, by adding claywash, core gum and other items, for making blacking of different strengths, which gave varying results and sometimes many disappointments. Where

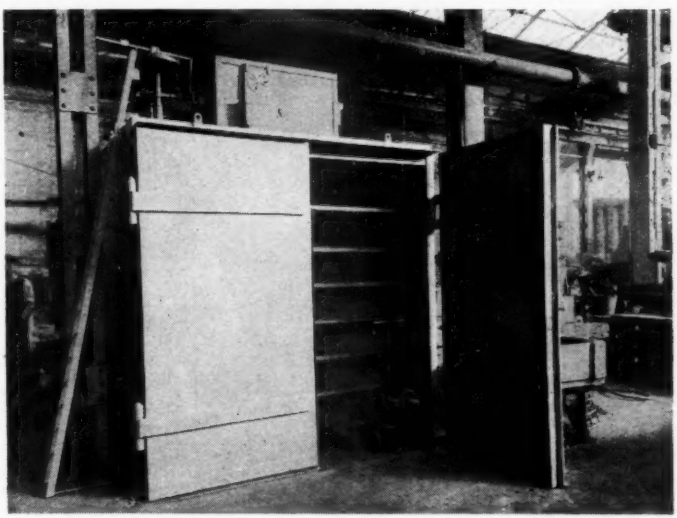


FIG. 9.—BATCH-TYPE CORE OVEN FOR THE LARGER CORES.

*A Paper read before the Newcastle-upon-Tyne Branch of the Institute of British Foundrymen, Mr. S. Unsworth presiding. The author is on the staff of C. A. Parsons Company, Limited.

Cores and Core-making

cores have very thin sections, it is advisable to give these two coats of blacking, the first one being dried before applying the second. This will protect and aid them to withstand better the attack of the metal.

Jigging and Closing

The jigging or fixing together at the core bench of as many cores as possible is a practice which usually pays good dividends. For example, the complicated job of closing a mould for a motor cylinder block and crankcase casting, shown in Fig. 10, may be quoted. It consists of 32 cores, and there are metal sections of only $\frac{3}{16}$ in.; assembly can be much simplified by the use of jigs. A metal jig is provided in which the cores are assembled. The first core to be used is a cake core representing the bottom part of the mould face, carrying core prints for the bore, inlet and exhaust cores, and prints for the water jackets. This core is set to a definite location in the jig, and from here the building of the unit commences (Fig. 11). As the lifting of the assembly takes place from this core, one $\frac{1}{2}$-in. core-iron is placed over the bore prints, and one in the front or manifold edge during the ramming. As each core is inserted, it is checked from a given point on the jig, and then pasted into position, thus enabling the sealing of vents, the correct setting of cores, and the checking of metal thickness. The last to go into position are the four bore cores (Fig. 12), which are set by a metal plate passed over them and dowelled on to the main jig. This completes the jigging and checking of the assembly, which consists of 17 cores. The unit is then put back in the stove to dry the paste. When dry and cool, the top plate is removed. A length of thin wire (Fig. 13) is threaded on each side of the $\frac{1}{2}$-in. iron in the bottom cake core, and passed through the two centre bore cores; another piece is fixed to the iron on the

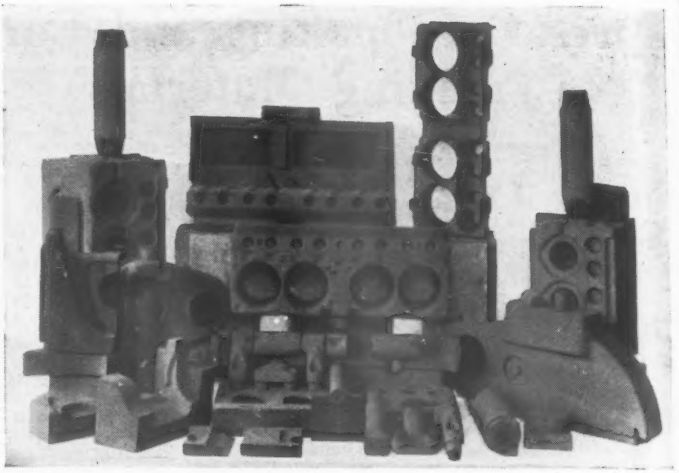


FIG. 10.—SET OF CORES FOR A MOTOR CYLINDER BLOCK AND CRANKCASE, BEFORE ASSEMBLY.

FIG. 11.—JIG FOR ASSEMBLING CYLINDER BLOCK CORES, SHOWING THE FIRST CORES IN POSITION.

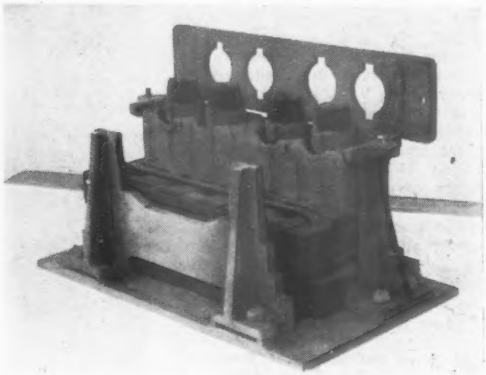


FIG. 12.—JIG ASSEMBLY OF CYLINDER BLOCK CORES—FINAL STAGE.

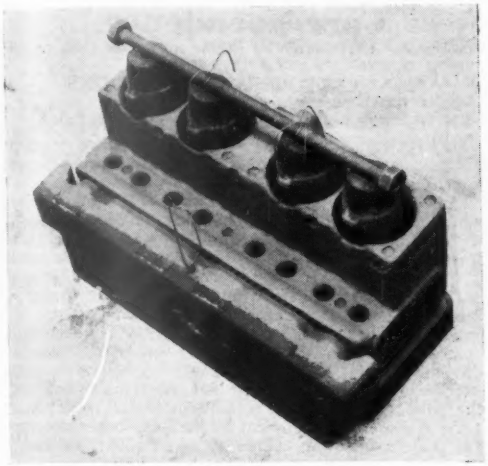


FIG. 13.—ARRANGEMENT OF LIFTING WIRES IN THE CYLINDER BLOCK CORE ASSEMBLY.

manifold face. A bar is placed on the top prints of the bore cores, and fastened by the two lifting wires. By holding the bar with one hand, and the lifting wire at the front with the other, the whole unit is lifted out of the jig. Joints can then be filled in and blacked

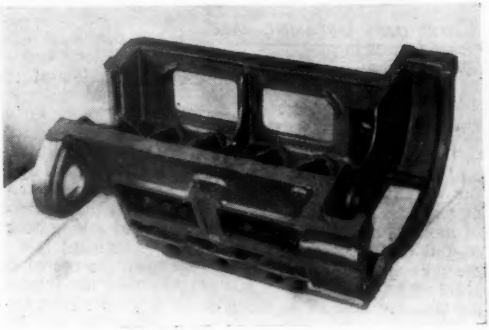


FIG. 15.—COMPLETED CYLINDER BLOCK AND CRANKCASE CASTING.

over, thus eliminating much flash, which is undesirable on this type of work. The position now is that the moulder who is to close the mould (Fig. 14), instead of having 32 separate cores, has one unit accurately assembled, free from loose sand and correctly vented, together with 15 other cores. After the assembled group is set in the mould and checked for height and thickness, the top prints of the bore cores form a reliable guide for the setting of the two crankcase cores. It can now be said that by being able to set this one unit of 17 cores into the mould with the ease of a single core, the management has at least gained the advantage in knowing that, up to this stage of closing, the job is free from dirt, and halfway on the road to completion.

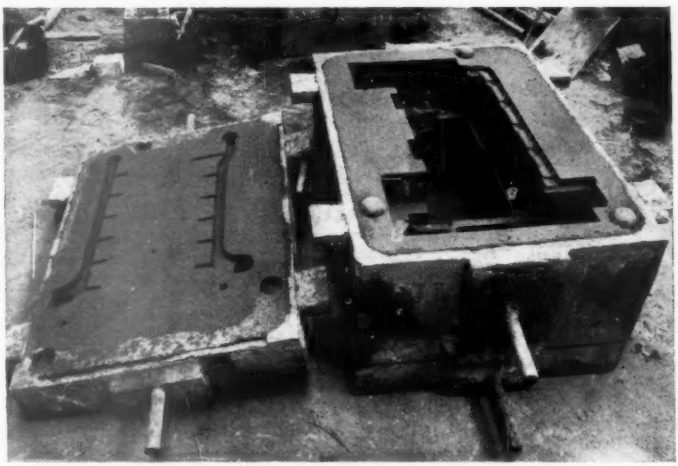


FIG. 14.—TOP AND BOTTOM PARTS OF THE CYLINDER BLOCK MOULD
FIG. 12.—JIG ASSEMBLY OF CYLINDER BLOCK

This method has made it possible for the mould to be made with only one joint, that at the top flange. This is another great advantage to be taken into consideration. The top part of the mould carries the runner system, and vents for removing the gases from the top cores. The gas from the assembled unit of cores is taken away through the mould under the cake or bottom core. A tube passing through a hole in the moulding-box side is sealed into a 2-in. dia. print on the back wall of the top jacket, thus taking care of most of the gas from the water jackets. Several orders have been completed for the cylinder block described and shown in Fig. 15; castings have been satisfactory and the percentage of scrap very low. This speaks well for the high degree of co-operation between the patternshop and foun-

Cores and Core-making

dry, which was a feature of the construction of the pattern equipment.

Cleaning and Dressing of Castings

The amount of work and time spent on the dressing and cleaning of castings depends to a large extent upon the workmanship of the moulders and coremakers, and at times an extra half-hour or so spent on the finishing of moulds or cores could be the means of saving hours of toil in the dressing shop. This department is one that has derived the greatest benefit from the use of oil sand, which, on some jobs, has enabled them to cut down the cleaning time by as much as 30 to 40 per cent.

Defects Arising from Faulty Core-work

The following are a few of the defects arising from the use of faulty, incorrectly made or poor cores:—

(1) *Blown-off Core.*—Mainly caused through insufficient venting.

(2) *Scabbing.*—Caused by dampness or poor ramming of the sand.

(3) *Broken Core.*—The missing out of a core iron or the choking of a vent is responsible.

(4) *Crushed Mould at Core Prints.*—Distorted or patched cores are the cause.

(5) *Cutting Through.*—Caused by sand in core-box joints, and misshapen cores.

(6) *Burn-in.*—Badly finished cores, or the use of the wrong sand mixture are reasons for this defect.

Observations and Conclusions

(1) A number of castings have been lost through the inadequate means provided in moulds for bringing off the gases that are generated in oil sand during pouring of the casting.

(2) Most of the older coremakers and moulders who have always worked with loam seem to be against the change-over to oil sand.

(3) Oil sand has played an important part in foundry schemes by being one of the means of increased production. It is felt that there must be limits to the use of oil sand, but as to where these are, the Author would not like to commit himself; however, they have not yet been reached in current practice. The future of oil sand is something foundrymen all look forward to with interest. The Author, before closing, expressed his thanks to C. A. Parsons & Company, Limited, for their kindness in permitting him to make use of the illustrations and certain items of information, and to those members of the staff who so willingly assisted in the preparation of the Paper and slides.

MR. GORDON WESTON, B.Sc.(Eng.), has been appointed Assistant Director of the British Standards Institution.

AN EXTRA-ORDINARY GENERAL MEETING of the Institute of Vitreous Enamellers will be held at the North Staffordshire Technical College, Stoke-on-Trent, at 9.30 a.m., on March 10.

Correspondence

[We accept no responsibility for the statements made or the opinions expressed by our correspondents.]

MANUFACTURERS' ASSOCIATIONS

[Slightly Abridged.]

To the Editor of THE FOUNDRY TRADE JOURNAL

SIR,—I wonder whether I can be of any help in this fascinating question of the nomenclature of Trade Associations.

Our own evolution is interesting. We started by being a collection of bodies devoted to different aspects of the trade, which merged in 1897 as the Master Brassfounders' Association. In 1906 this was changed to the Brass Masters' Association, and in 1921 was again changed to the Brassfounders' Employers' Association, because the Unions felt the old title to be oppressive. From 1896 until about 1941 the Association had been primarily engaged in wages negotiations with the Unions, but when I was appointed in the latter year I sensed a keen desire to develop in various other directions, and we became increasingly devoted to the commercial, technical and all the other aspects of a trade association, although we retained our basis of negotiation with the Unions. This has, however, become a minor activity, since we merely follow the Engineering Agreements with one or two exceptions, and very little time indeed is spent on this side of the work. Therefore, we decided that the term "Employers' Association" was a misnomer, since, as in the case you cite, for example, we were believed to be a body engaged only in wages negotiations, whereas we were substantially more than that.

I do, however, heartily agree with Mr. Eric L. Heathcote that an Employers' Association signifies an Association concerned with wages, and I think it would be better if all associations were to describe themselves as Trade associations when engaged on activities other than those relating to employment. The phrase "manufacturers' association" is not always applicable, since a considerable number of Associations are engaged in services, *e.g.*, insurance, banking, *etc.*, or distribution, but the term "trade association" covers all of these and, I believe, is generally acceptable.

Yours sincerely,
EDGAR N. HILEY,
Secretary.

The National Brassfoundry Association,
30, Waterloo Street,
Birmingham, 2.
February 7, 1949.

[We thank Mr. Hiley for his suggestions, but we dislike the term "Trade" Association, as we think that the "man in the street" associates the term with retail activities. As "employers" or "masters" are directly correlated with "employees" and "servants," we think that "Manufacturers' Associations" focuses attention on activities germane to the making of goods for sale. We have decided to use this phrase for an extended period to ascertain practical reactions.—EDITOR.]

Book Reviews

Non-ferrous Castings. By R. F. Hudson. Published by Chapman & Hall, 37, Essex Street, London, W.C.2. Price 22s. net.

Books on non-ferrous foundry practice are all too rare, and although much experimental and research work has been done, the results—and the interpretation of such results into everyday practice—are not readily available to the practical foundryman. There is thus a need for much more practical metallurgical guidance than is yet available. This book is therefore welcomed for its attempt to supply metallurgical facts and guidance to the non-ferrous foundryman in a practical and understandable manner.

The author states in a foreword that "the main purpose of the book is to bring the scientific viewpoint to the practical man . . . and to promote better understanding between the practical man and the metallurgist . . ." Although relations between the practical man and metallurgist have undergone a radical change in the past thirty years within the experience of the reviewer, there are still isolated instances where ignorance and antagonism are responsible for lack of co-operation, with resultant inefficiency and unnecessary trouble. In such cases—now happily rare—it is doubtful whether this or any book would be of much use; but for the large body of painstaking and conscientious foundrymen who wish to improve themselves and their product by understanding more of the metallurgical aspects of their work, this book will be a useful aid.

It starts with the raw materials used in the non-ferrous foundry, giving basic data about metals, fuels, and refractories. This is followed by a chapter on non-ferrous moulding sands, and the effect of the various constituents and additions. An excellent fault-locating table deals with defects due to the use of sand with incorrect properties. It is only a minor criticism, but its value would be still further enhanced by the recommendation of rather more specific and detailed "remedies."

The effect of additions to sand, and the thermal conductivity of sands and special moulding mixtures are adequately dealt with. It has always seemed to the reviewer that non-ferrous founders have been slow to exploit the advantages of either local or general rapid chilling which can be obtained from the silicon carbide grit and graphite mixtures mentioned. This chapter will repay study by the thoughtful foundryman. Sand testing is well covered, and useful information is given on core sands and the more usual core binders. It is perhaps too much to expect, but no information is given regarding the use of phenol formaldehyde or urea formaldehyde as core binders.

A little over half the book is occupied by two chapters dealing comprehensively with melting and moulding practice. The first of these—chapter 5—deals with various types of furnaces, crucibles and their maintenance, and the correct melting technique necessary for the tin bronzes. Chapter 6 deals with the high-tensile bronzes, nickel bronze, and other special alloys. These two chapters cover a wide field and provide much useful information and practical guidance. There are also sections on the casting of test-bars, the salvaging and repair of non-ferrous castings, and chill and centrifugal castings.

The book concludes with two appendices—the first illustrates ten common defects, and gives causes and remedies on similar lines to the I.B.F. Atlas of Defects in Castings. The second reproduces 18 photomicrographs of various structures and constituents found in commonly used non-ferrous alloys. The book is in line with modern thought, and bears the stamp of practical experience; and, in fact, stands up well to the test of independent practical experience.

A. L.

Report on the First Conference on Management. Published by the Council of Ironfoundry Associations, Crusader House, 14, Pall Mall, London, S.W.1. Price 5s. 0d.

This conference was held in June last year and on its conclusion this Journal devoted two leading articles by way of comment. Now that the proceedings are available as an eighty-four page brochure, a clearer view is possible as to what it was all about. The contents are a delightful mixture of nebulous theory and hard-headed practice, as would be expected from such a gathering. Moreover, there was an example given—actually by quite a young member of the audience—of the futility of drawing practical conclusions from statistics without a full knowledge of the industry; on mature thought, others would be forthcoming. Six Papers or lectures were presented to the Conference; and without being invidious, the reviewer deems Mr. J. W. Gardom's Paper on Some Aspects of the "Garrett Report" to be most valuable, as therein is given a preview of what is expected from the ironfounding industry. Whilst much appears costly—almost prohibitive to the smaller concerns—there is shown to be the possibility of cash benefits in the long run. The study of the three tables in the appendices is strongly recommended. Mr. H. A. Hepburn, who is H.M. Deputy Chief Inspector of Factories, in his lecture also deals with the Garrett Report and stresses the problems of dust and carbon monoxide removal from foundries. Being an engineer, he is cognisant of the magnitude of the problems and rightly asks for continuous co-operation from everybody for their solution.

It is this phase of management which the conference best covered. Other aspects, such as human relationships, psychology, recruitment, efficiency, and the like, not being exclusively of foundry interest, the reviewer finds less attractive, possibly on account of the fact that in recent times there is too much being said by too many people resulting in a sort of mental indigestion, because of the platitudinous sauce with which the mixtures are being presented. The reviewer makes an exception of the lectures of Mr. Robert R. Hyde, who for so many years has devoted so much attention to industrial welfare. The views he sets out are most stimulating. The industry should be grateful to the Council of Ironfounders for making available such a useful brochure.

Powdered Graphite in Foundry Practice*

By P. Nicolas

The author has often noticed the wide differences obtained from the use of graphites either when employed as a paint in connection with stoved moulds or as a parting powder for green-sand work. In both cases it may be that an excellent skin results, or just the opposite. It is now thought that these diverse results can be associated with the properties of the graphites used. Several products of different origin

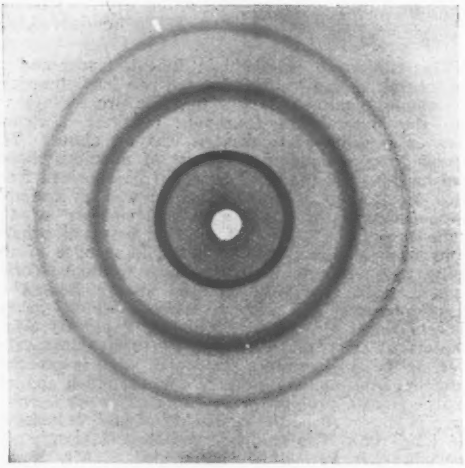


FIG. 1.—X-RAY DIFFRACTION PATTERN FOR BRAZILIAN GRAPHITE.

—Italy, Madagascar and Morocco—have been examined. Samples of these graphites have been made the subject of as complete research as possible both in the laboratory and the foundry.

Determination of Properties

A start was made with tests for grain size, then a chemical analysis was taken, and finally an X-ray examination was made, with the object of determining the graphitic carbon content of the materials tested. The results of the sieve and chemical tests are set out in Table I.

X-ray Examination

The results shown in the three illustrations, Figs. 2, 3 and 4, should be viewed in conjunction with the one of pure graphite, Fig. 1. These illustrations have been developed and produced under exactly the same conditions. Their examination permits of the postulation of the following observations:—

(1) The product called pure graphite is truly perfectly homogeneous. It includes no ray other than graphite in the true sense, and the diverse diffraction rings corresponding to the hexagonal structure of this body can easily be distinguished.

(2) The Italian material is shown in Fig. 2, wherein the diffraction rings of pure fine homogeneous graphite are marked by an arrow. However, there are a certain number of supplementary rings due to the presence of substantial proportions of mineral impuri-

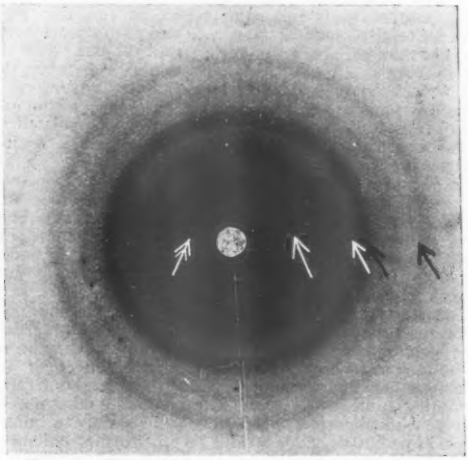


FIG. 2.—X-RAY PATTERN FOR ITALIAN GRAPHITE.

TABLE 1.—*Siece Tests and Chemical Composition of Three Types of Graphite.*

Place of Origin	Italy.	Madagascar	Morocco
	Per cent.	Per cent.	Per. cent.
Sieve Tests.			
Retained on sieve No. 200 A.F.S.	0	51.8	1.9
Retained on sieve No. 270 A.F.S.	0	6.6	3.3
Pan (less than No. 270 A.F.S.)	100	41.6	94·8
Chemical Analysis, on Dried Sample.			
Volatile matter, per cent.	1.37	3.27	1·40
Fixed carbon	77.99	80.20	15·82
Ash	26.52	16.53	58.40*
Composition of ash—			
SiO_2	57.76	47.51	24·18
Al_2O_3	26.52	28.08	9·48
Fe_2O_3	9.93	21.94	5·21
CaO	1.87	0.04	54·12
MgO	3.61	Nil	6·92

* Translated from *Fonderie*.

* The missing percentage is due to the presence of oxygen.

ties as is instanced by the one indicated by a double arrow. Moreover, these rings show as discontinuities in the structure which indicate that mineral materials are made up of relatively large and irregular grains.

(3) The Madagascan material showed a structure (Fig. 3) very different from the previous one. The graphite rings appearing therein show up very distinctly, but they are irregular and contain holes. This means that this graphite has a glossy crystalline structure viewed either from the point of view of crystal size in the true sense or as their dispersion. Some of these rings show up as fine but faded ones. They are to be associated with mineral matter, which is made up of fine grains. The relative intensity of these impurity rays is distinctly weaker than for the Italian

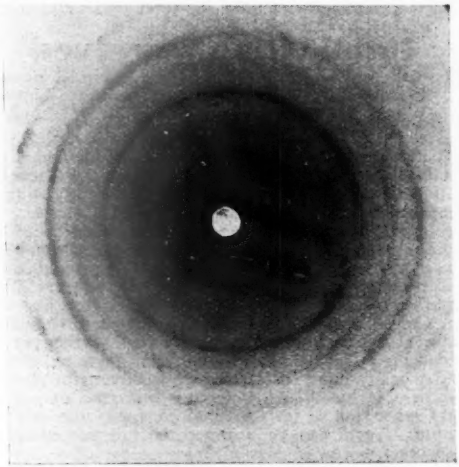


FIG. 3.—X-RAY PATTERN FOR MADAGASCAN GRAPHITE.

graphite examined earlier, which indicates that the mineral material is lower in the Madagascan graphite than in the Italian.

(4) Fig. 4, which shows the Moroccan graphite, no longer shows the presence of graphite in the true sense. No doubt it is there in small quantities, but it exists in a finely divided state. All the visible rays are due to very grossly crystallised mineral matter.

From the laboratory tests it may be concluded that the Italian graphite is very fine; the content of true graphite is fairly high and the ash content is not inconsiderable. The Madagascan graphite is coarse; the true graphite content is high and the ash content low. The Moroccan graphite is fine; the true graphite content is extremely low and it is essentially constituted of mineral matter, largely lime, in the form of calcium carbonate.

Foundry Tests

Italian graphite used either as a dressing for chills or stoved moulds has given excellent results. The skin of the resulting castings was of a high standard. Used as a parting powder for green-sand moulds the results were equally good, but after rapping the pattern, this variety, because of its real fineness, has a tendency to stick to the pattern plate. Madagascan graphite used alone as a dressing for stoved work neither spreads well nor does the casting strip perfectly, this being due to the coarseness of its particles (as has been shown,* there is room for research in this particular field for a parting powder of extreme fineness). On the other hand, because of this last characteristic, Madagascan material gives work as there is no adhesion to the pattern plates. Moroccan graphite does not give satisfactory results

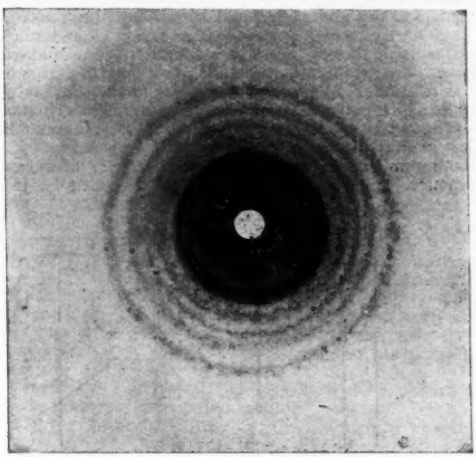


FIG. 4.—X-RAY PATTERN FOR MOROCCAN GRAPHITE.

excellent results as a parting powder for green-sand either as a dressing for stoved work or as a parting powder for green-sand moulds. Because of its high lime content, the stripping of castings is very difficult and their skins are particularly rough.

Conclusions

For the compounding of dressings to be used for coating chills or dies or stoved work, the Italian graphite tested, with its fine structure, gives the best results. For a parting powder for green-sand moulds, it seems desirable to use a graphite like the Madagascan samples, as the coarser structure responds much better to the smoothing and rapping conditions involved.

Finally, the author thanks the following foundries for the co-operation accorded to him: Fonderies Devaux; Usines Lobstein; J. Marichal, Ketin & Co., and Fils de A. Werts.

* P. Nicolas. Origin and Development of Parting Powders. *Fonderie*, No. 22, October, 1947, pp. 843 to 852.

Jobbing Foundry Method

By "Tramp"

Methods of moulding in a jobbing shop catering for "one-off" jobs are largely determined by the type of pattern equipment supplied. These are often of the cheapest construction and designed more to facilitate rapid patternmaking than economic casting production. Consequently the moulder has to adopt ways and means which would not be considered ideal under production conditions for making this sort of casting.

Fig. 1 shows a pattern for a cam roller of a machine tool with the groove cast in position. The pattern was made with a loose piece "A" which followed the joint at the bottom of the groove. The method of moulding visualised by the patternmaker was by the use of a three-part box with joints at *xx* and *yy*. Unfortunately no suitable boxes were in stock, and it would not have been economic to make a set for this isolated order. Other ways had therefore to be devised to utilise this pattern equipment in existing box parts.

The method adopted consisted in first ramming the job in the bottom box, face *xx* of the pattern being on the ramming board, and then turning over as normal practice. The outside was then cut away and a joint made as shown at C-C and C_1-C_1, Fig. 2, the lower part of which followed the shape of the bottom part of the groove. Portion D of the mould was then rammed, the sand being supported by means of a stiff circular bar E. When the joint *xx* was reached this was finished off level and dusted with parting powder. The top was next rammed in the usual way and lifted off. The removal of piece A of the pattern enabled the moulder to lift out the ring of sand D which virtually formed a core on the outside of the casting. The removal of the main portion of the pattern was thus rendered straightforward, and after the necessary touching up the ring was restored to place and the top re-assembled. The extra moulding time entailed and the risk involved was the price paid to use in a two-part box a pattern intended for three-part moulding.

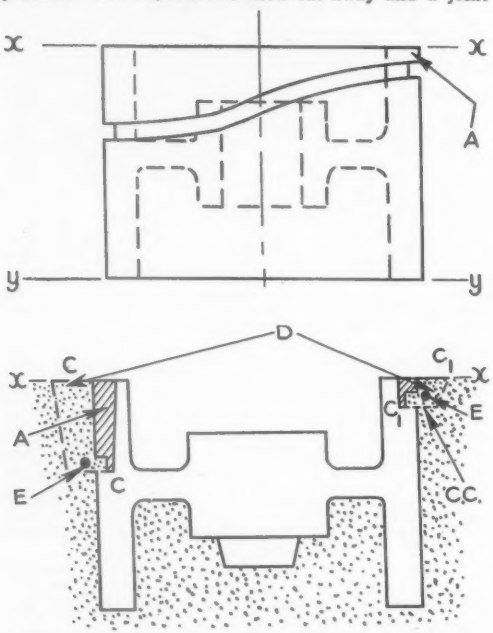


FIG. 1.—(ABOVE) PATTERN FOR CAM ROLLER; (BELOW) SECTION THROUGH THE MOULD, SHOWING THE JOINT LINES.

Publication Received

The Iron and Steel Trades in 1948—A Special Review. Compiled by William Jacks & Company, Limited, Winchester House, Old Broad Street, London, E.C.2.

This current review well maintains the high standard established over a long period of years. Because of nationalisation talk, the author has rightly dipped deeper into history than is his custom. Moreover, he has given somewhat more space to a consideration of ironfounding. Each phase of the industry from iron-ore production to distribution is logically covered. It is unfortunate that when steel is being discussed, it is regarded as one commodity. The reviewer, when at Le Creusot, made something of the order of fifty different types, and has always felt that they never added up to give a figure that meant anything. Thus to-day many hundreds of thousands of tons of electric steel are included, and compared with the output of 1913 when but a few hundred tons was the world's output. Yet it can be assumed that all this counting is necessary, for it does give some sort of a canvas on which the economists and politicians can sketch-in their notions for the future conduct of the industry.

At a Fabian Society meeting, a lecturer said that because of the high price of *steel*, Morris and Austin threatened to put down their own *steel* works—actually Ford did instal a *steel* plant. The former refers to steel sheets and the latter to a blast-furnace plant, but it is all *steel* to the politician. Because of this, the reviewer hopes that this booklet will be read by the politicians as well as by members of the industry to which it is specifically addressed.

Sir Ben Lockspeiser's New Appointment

Sir Edward Appleton, K.B.E., K.C.B., will relinquish on April 30, 1949, his appointment as Secretary to the Committee of the Privy Council for Scientific and Industrial Research. The King has been graciously pleased to approve the appointment of Sir Ben Lockspeiser, M.A., M.I.Mech.E., F.R.A.S., to succeed Sir Edward Appleton. Sir Ben Lockspeiser is at present Chief Scientist at the Ministry of Supply and will take up his new appointment on May 1.

Notes from the Branches

London : Joint Meeting with the Institute of Metals

It has been the practice for many years for this Branch and the London Section of the Institute of Metals to hold joint meetings each session. In December the joint meeting was held in the rooms of the Institute of Metals at 4, Grosvenor Gardens, S.W.1, at which Dr. E. Scheuer, of International Alloys, Limited, Aylesbury, presented to a very large audience a Paper on "The Solidification of Metals with Special Reference to Continuous Casting Processes."

Mr. W. F. Randall, President of the London Section of the Institute of Metals, presided, and was accompanied by Mr. P. D. Pincott and Mr. F. Arnold Wilson (President and Vice-President of the London Branch of the I.B.F.).

The Paper dealt with the underlying metallurgical principles and practice of casting aluminium ingot metal continuously. It was followed by a full discussion, of which the following is an abstract:—

DISCUSSION

There was no danger of dross and the like floating on the surface of the metal being included in the billets, as was often the case with billets cast from the top by the normal method. As to the casting of the higher-melting-point alloys, the lecturer emphasised that the volume of production of bronze and copper alloys was by no means negligible. The difficulties were not of such a nature as to make it doubtful that the process would be continued. Coming to the heat extraction of the high-melting-point alloys, he said it was governed by two factors, *i.e.*, the temperature gradient and the amount of heat to be extracted; as the temperature gradient in the case of the high-melting-point alloys was much higher than in the lower-melting-point alloys, the cooling was not so difficult as it might appear to be. The arrangement included the use of a water jacketed mould, the jacket being of only a few millimetres thickness, through which water was forced at enormous speed to help the cooling.

Casting on to Rolls

DR. J. C. CHASTON referred to what Dr. Scheuer had called the Bessemer process, involving pouring liquid metal on to a pair of rolls. He believed it had been suggested that that process worked just as well as the process of casting one long billet continuously. He understood, however, that the failure of that process of casting on a pair of rolls was due to deformation occurring before the metal was completely solidified; as the rolls rotated, a partly solid shell having liquid metal inside it was formed, and troubles arose due to buckling and folding. In the continuous casting described by Dr. Scheuer, however, no attempt was made to deform the metal until it was completely solidified. With regard to inverse segregation, he did not know whether the description of it as being due simply to the thermal gradient was one which was completely accepted.

DR. SCHEUER stated that from his own experience gas trouble in aluminium billets had been practically eliminated by the continuous casting process. He believed the main reason was that the pouring temperature was so low and, therefore, it was not necessary to heat the metal to high temperatures before casting; secondly, the chilling during solidification was so intense that some gases that normally would come out during slow solidification were simply entrapped in the metal.

Inverse Segregation

If a billet were cooled in the ideal way from the bottom to the top there was simply a sinking down of the liquid from one layer into the other, and the only shrinkage occurred at the top surface; a defect would materialise only when there was no more metal to sink into the shrinkage cavities which tended to form. In this way inverse segregation could occur at the bottom end of the billet without any concomitant shrinkage cavities; he would even say that there could be a certain amount of radial inverse segregation without there being shrinkage in the centre, for there was still sufficient communication for the liquid metal to sink into the very fine layer below.

Certainly there was a possibility of gas rising to the top during solidification. On the other hand, very often, gas bubbles produced during solidification did not come to the top, although it seemed to be possible for them to do so; they were hanging between the dendrites and could not get out. He was also convinced that it was possible to retain the gas in solid solution in the metal by chilling.

MR. BAKER said he still did not follow the explanation of the inverse segregation without porosity. He recalled the Author's reference to the mechanism whereby a layer of metal, when freezing, would give up some of its low-melting-point liquid to a layer below, and in turn would get such liquid from another layer; and he agreed that by that mechanism one could explain the local segregation at the side of the ingot. But he failed to see how there could be inverse segregation in the ingot without porosity.

DR. SCHEUER replied that if the segregation were in the centre of the ingot, there was still porosity in some degree. But simple enrichment was a different matter.

Ingot Withdrawal from the Mould

MR. WILLIAMS, referring to the process whereby the ingot was drawn away from the wall of the mould, pointed out that many metals were very weak at just below the melting point. He wondered how critical was the rate at which the ingot was drawn away, for there might be a tendency for the ingot to crack.

DR. SCHEUER said the difficulty was not so great as might be imagined. As soon as the shell was formed along the wall of the mould, it began to shrink and, therefore, separated from the mould wall. Provided the mould wall was smooth and was lubricated, as it was almost always, the billet came down, not by pull,

Notes from the Branches

but by its own weight; the pull was applied merely to give it a start when there was practically no weight there, and subsequently the billet was controlled only by the guiding rolls.

MR. SWAN (Kent Alloys, Limited) asked if it were generally the case that an alloy was more easily cast by the continuous process, to give a good surface, than was pure aluminium.

DR. SCHEUER replied that, on the contrary, pure aluminium was the easiest metal to cast by the continuous process; there was no difficulty about it. But alloys needed a little more attention, mostly because the conditions needed to be kept within a closer range.

Cost and Output

To a query as to cost and output, the Author replied that one continuous casting machine had an output of the order of 100 tons per week. The economic success of the process was not very dependent on the size of the billets, because what was lost in respect of the weight of each single small billet would be compensated by the number cast. It was necessary to provide vertical space to accommodate dies of the length of the billets, because it was necessary to use a hydraulic plunger and that must be as long as the billets; so that some 20 ft. of vertical space was needed. The cost of the installation, including hydraulic accessories, the water-cooling arrangements, and so on, was probably of the order of £10,000 or so.

MR. A. J. MURPHY, proposing the hearty thanks of the meeting to Dr. Scheuer, said the process described involved foundry work, and it was metallurgical work of a very high order. One was impressed by the frequency with which Dr. Scheuer, in his exposition of the technology of continuous casting, had referred to making use of advances in the metallurgy of cast metals with which many of those present had been connected, even though they might have no connection with continuous casting. It was refreshing to see all the resources of the metallurgical armoury being brought to bear on the problem. Dr. Scheuer had summarised the whole matter by saying that the continuous casting process gave one a feeling of satisfaction, that it was satisfactory from the theoretical, the mechanical and the production aspects.

The vote of thanks to Dr. Scheuer was seconded by Mr. D. W. Rhys, and was carried with enthusiasm. Finally, the chairman assured the members of the Institute of British Foundrymen how much their colleagues in the Institute of Metals had enjoyed their participation in the meeting, and how much they had contributed to its success by their presence.

THE BRITISH IRON AND STEEL FEDERATION are taking responsibility for two exhibits at the forthcoming Daily Mail Ideal Home Exhibition to be held at Olympia from March 1 to 26. They are "Three Kitchens, yesterday, to-day and to-morrow," and a large working model of an iron and steel works.

Reducing Pattern-store Fire Hazards

Recently we received for review a pamphlet published by the Fire Officers' Committee of the Fire Protection Association, and, being cognisant of the special conditions attached to pattern stores, we asked Mr. W. H. Tuckey, O.B.E., the director of this association, for the benefit of his experience. In reply, he has very kindly furnished us with the following notes:—

Buildings.

Should be detached single-storey buildings without galleries and with brick walls at least 9 in. thick or walls of reinforced concrete. Windows should be limited as far as practicable. The floor area should not exceed 10,000 square feet. Stores exceeding this area should be sub-divided by brick walls, not less than 9 in. in thickness, passing through the roof, dividing the premises into cells not exceeding 10,000 sq. ft. each.

Lighting.

Electricity only. For inspection of patterns, self-contained portable electric lamps should be used. Flexible leads should be prohibited.

Heating.

If heating is required, it should be by low-pressure hot water, or low-pressure steam (not exceeding 15-lb. gauge pressure). Provision should be made to prevent patterns coming into contact with pipes.

Stacking.

Storage should be limited to a height not exceeding 12 ft. Gangways between racks should be not less than 4 ft. wide.

Processes.

No painting, varnishing or any other process should be permitted in the store.

Exposure.

No windows should be allowed which are exposed directly or diagonally within 50 ft. of windows or other openings in any other building. All doors within 50 ft. of openings in the walls of any other building constructed of timber, or other combustible materials, should be "fire resisting," or, if of wood, they should, together with the frames, be covered with sheet metal over asbestos.

Appliances.

First-aid appliances should be provided on the basis of one 2-gall. acid-alkali or water (gas expelled) extinguishers for every 250 sq. yds. of floor area. Automatic sprinklers are strongly recommended, with water supply giving a running pressure of at least 25 lb. at the level of the highest sprinkler.

Cleanliness.

Stores should be kept clean and tidy, should be swept frequently, and all refuse removed from the buildings.

Smoking.

Should be strictly prohibited.

THE FEBRUARY NUMBER of "Art and Industry" (1s. 6d.) contains an illustrated description of the exhibition train created by Allied Ironfounders, Limited.

Companies' Dividend Policy

Views on Limitation of Payments

The first replies to a questionnaire sent out by the Federation of British Industries show that a majority of the companies so far appears to be prepared to support limitation of dividends. The F.B.I. had asked companies to say whether, in respect of their dividend policies during the 12 months from March next, they would support alternative "A," which was limitation of dividends for a further year on broadly the same terms as last year, or alternative "B," which called for "moderation and restraint."

It is perhaps noteworthy that, in their replies, several companies make their undertakings dependent on there being no further significant increase in wage rates, while one or two seek a Government assurance that, in case of nationalisation, compensation prices will not be based on Stock Exchange prices.

The directors of Imperial Chemical Industries, Limited, agree to limitation subject to any major circumstances arising affecting the company and which would cause a change of policy. J. Stone & Company, Limited, and Textile Machinery Makers, Limited, will make no increase provided there is no general increase in wages this year, while Ransomes, Sims & Jefferies, Limited, is prepared to agree to limitation for another year if the Chancellor of the Exchequer will undertake not to use middle Stock Exchange prices as a basis for calculating compensation in the nationalisation of industries.

The following are some of the companies which have agreed unconditionally to limitation for a further 12 months:—W. & T. Avery, Limited; British United Shoe Machinery Company, Limited; Crompton Parkinson, Limited; Ferranti, Limited; Glenfield & Kennedy, Limited; Mirrlees Watson Company, Limited; Pease & Partners, Limited; Beans Industries, Limited; British Aluminium Company, Limited; British Oxygen Company, Limited; George Cohen, Sons & Company, Limited; Mellor, Bromley & Company, Limited; Johnson, Matthey & Company, Limited; Ransome & Marles Bearing Company, Limited; and the Westinghouse Brake & Signal Company, Limited (which urges the necessity for large tax concessions).

Among the companies to have indicated their willingness to agree to a policy of "moderation and restraint" are:—British Ropes, Limited; Marshall, Son & Company, Limited; Plessey Company, Limited; Sanderson Bros. & Newbould, Limited; Ultra Electric (Holdings), Limited; Thos. W. Ward, Limited; Geo. W. King, Limited; John Shaw & Sons Wolverhampton, Limited; and Vickers, Limited.

JOSE LOBO COMERCIO S.A., Avenida Marques de Olinda, 125, Recife, Pernambuco, wishes to contact a United Kingdom manufacturer of Diesel engines with a view to representation in Brazil for the sale of those products. Further information can be obtained from the Commercial Relations and Exports Department, Board of Trade, Thames House North, Millbank, London, S.W.1 (reference, C.R.E. (I.B.) 2908/49).

Hadfields's Claim for Exemption

Directors on Proposed Compensation

The directors of Hadfields, Limited, Sheffield, claim that owing to the nature of its products the company should be deleted from the list of companies proposed to be nationalised under the Iron and Steel Bill. They express the opinion that nationalisation of the iron and steel industry is detrimental to the national economy. "Another aspect directly affecting our stockholders," they continue, "is the compensation proposed to be paid to them. This has been estimated at £1 10s. 10d. of British Iron and Steel stock for each 10s. unit held, whereas the consolidated balance sheet shows that the value is £3 2s. 9d. per 10s. unit." The chairman (Lord Dudley Gordon) will make further reference to this matter at the annual meeting to be held at Sheffield on March 8.

The directors' report states that, in view of the division of the activities of the parent company into separate companies, as from October 1, 1948, the directors deemed it desirable to have a valuation made of the fixed assets to ensure accuracy in allocating such assets at their present-day values to the new companies. In the case of the parent company the figures show an excess of £1,559,905 over book values, which sum, together with the depreciation reserve of £1,354,283, has been transferred to capital reserve. The fixed assets of the subsidiaries at September 30, 1948, show a surplus of £70,600. In the consolidated balance sheet, the surplus on revaluation of fixed assets stands at £2,984,788.

The volume of commercial sales has again shown appreciable expansion and the order-book stands at a very high level. Production also continues to increase as further labour and plant become available. Each of the subsidiary companies made a profit during the period, which has been included in the parent company's accounts to the extent of the dividends received.

The development and modernisation schemes referred to in previous reports are showing distinct progress, but deliveries of new equipment are slow and the full benefits to be derived therefrom will be gradual. The entire plan is estimated to take five years and to involve an expenditure of £4,000,000.

Changes of Name

The following companies have recently changed their names, the new titles being given in parentheses:—

CHAMBERLAIN & BRAY, LIMITED, Birmingham (Joseph Lucas (Gas Turbine Equipment), Limited).

CHALMERS ENGINEERING & FOUNDRY WORKS, LIMITED, Bridgend, Glam (Nolton Foundry, Limited).

COLLIER DOWELL METAL FINISHES, LIMITED, London, W.1 (Anderson Dowell Metal Finishes, Limited).

BOURNEMOUTH & POOLE ENGINEERING, LIMITED, Malvern (Armfield Hydraulic Engineering Company, Limited).

R. P. FINISHERS, LIMITED, metal treaters, etc., of London, E.C.2 (Labelling Machines (Wholesale & Export), Limited).

S. J. TAYLOR & SONS (1937), LIMITED, manufacturers of non-conducting cements and other coverings for boilers, etc., of Newcastle-upon-Tyne (S. T. Taylor & Sons, Limited).

Pig-iron and Steel Production in Great Britain

Detailed Figures for December

The following particulars of pig-iron and steel production in Great Britain have been extracted from the Statistical Bulletin for January, 1949, issued by the British Iron and Steel Federation. Table I gives the production of pig-iron and ferro-alloys in December, with the number of furnaces in blast; Table II, production of steel ingots and castings in December, and Table III, deliveries of finished steel. Table IV summarises steel-industry activities during six months ended December, 1948.

TABLE I.—*Weekly Average Production of Pig-iron and Blast-furnace Ferro-alloys, December, 1948. (Thousands of Tons.)*

District.	Furnaces in blast 1.1.49	Hematite.	Basic.	Foundry.	Forge.	Ferro-alloys.	Total.
Derby, Leics., Notts., Northants, and Essex ..	25	—	14.0	23.8	1.8	—	39.7§
Lancs. (excl. N.W. Coast), Denbigh, Flints, and Ches. ..	6	—	6.4	—	—	1.4	7.8
Yorkshire (incl. Sheffield, excl. N.E. Coast) ..							
Lincolnshire ..	14	—	24.3	—	—	—	24.3
North-East Coast	25	8.5	35.5	0.3	—	1.4	45.7
Scotland ..	9	0.7	11.0	3.3	—	—	15.0
Staffs., Shrops., Worcs., and Warwick ..	9	—	8.1	1.3	—	—	9.4
S. Wales and Monmouthshire	7	1.6	17.9	—	—	—	19.5
North-West Coast	7	14.1	—	0.2	—	0.3	14.6
Total ..	102	24.9	117.2	28.9	1.8	3.1	176.0*
November, 1948	103	29.4	122.5	27.3	1.7	4.3	185.3
December, 1947*	100	23.2	109.5	27.3	1.3	3.3	164.6

* Five weeks. § Includes 100 tons of direct castings.

TABLE III.—*Weekly Average Deliveries of Non-alloy and Alloy Finished Steel. (Thousands of Tons.)*

Product.	1947 (53 weeks).	1948	1947. Dec.*	1948. Nov.	1948. Dec.*
Non-alloy Steel :—					
Heavy rails and sleepers	7.6	8.9	7.7	9.5	8.4
Heavy and medium plates	31.6	36.2	31.6	37.8	38.5
Other heavy steel products	31.8	34.7	32.5	36.4	34.5
Light rolled products (excl. wire rods and alloy steel bars) ..	49.7	55.6	49.9	61.4	53.1
Ferro-concrete bars	3.2	4.2	3.9	4.5	4.7
Cold-rolled strip ..	4.6	4.8	4.3	5.0	4.7
Bright steel bars ..	4.8	6.1	4.8	6.3	6.0
Sheets, coated and uncoated ..	24.3	26.3	25.3	26.9	26.9
Tin, terne and blackplate	12.1	13.5	11.9	15.1	13.6
Tubes, pipes and fittings	13.5	15.1	13.9	17.0	15.9
Steel wire	10.8	12.8	10.5	13.9	13.7
Tyres wheels and axles	3.5	3.9	3.7	4.5	4.0
Forgings	5.0	5.8	5.5	6.3	6.0
Castings	3.0	3.5	3.3	3.8	3.6
Total	205.5	231.4	208.8	248.4	233.6
Alloy Steel :—†					
Tubes and pipes ..	0.3	0.4	0.4	0.4	0.4
Bars, plates, sheets, strip and wire ..	3.7	4.7	4.2	5.5	5.4
Forgings	1.8	2.5	2.2	3.0	2.8
Castings	0.6	0.7	0.7	0.7	0.8
Total	6.4	8.3	7.5	9.6	9.4
Total U.K. production‡	211.9	239.7	216.3	258.0	243.0
Less Inter-industry conversion ..	19.2	29.3	22.3	35.0	32.5
Total U.K. deliveries	192.7	210.4	194.0	223.0	210.5
Add deliveries of imported finished steel	2.2	3.4	2.5	6.3	5.6
Total deliveries of finished steel ..	194.9	213.8	196.5	229.3	216.1

* Five weeks.
† Excludes high-speed steel.
‡ Includes finished steel produced in the U.K. from imported ingots and semi-finished steel.

TABLE II.—*Weekly Average Production of Steel Ingots and Castings, December, 1948. (Thousands of Tons.)*

District.	Open-hearth. Acid.	Open-hearth. Basic.	Bessemer.	Electric.	All other.	Total. Ingots.	Total. Castings.	Total ingots and castings.
Derby, Leices., Notts. Northants and Essex ..	—	—	10.6 (Basic)	1.1	0.2	11.3	0.6	11.9
Lancs. (excl. N.W. Coast), Denbigh, Flints, and Ches.	1.3	20.3	—	1.0	0.5	22.2	0.9	23.1
Yorkshire (excl. N.E. Coast and Sheffield)								
Lincolnshire	—	28.6	—	—	0.1	28.6	0.1	28.7
North-East Coast	1.7	58.6	—	0.7	0.4	60.1	1.3	61.4
Scotland	5.0	38.3	—	2.1	0.7	44.4	1.7	46.1
Staffs., Shrops., Worcs. and Warwick	—	11.8	—	0.6	0.7	11.9	1.2	13.1
S. Wales and Monmouth	9.9	38.8	4.9 (Basic)	0.7	0.1	54.1	0.3	54.4
Sheffield (incl. small tonnage in Manchester) ..	7.8	20.2	—	7.2	0.6	34.1	1.7	35.8
North-West Coast	0.5	2.8	4.1 (acid)	0.3	0.1	7.7	0.1	7.8
Total	26.2	219.4	19.6	13.7	3.4	274.4	7.9	282.3*
November, 1948	28.8	235.8	20.4	14.5	3.6	294.5	8.6	303.1*
December, 1947	23.2	187.5	18.4	11.1	3.0	236.1	7.1	243.2

* Five weeks.

(Continued at foot of facing page.)

Obituary

MAJOR HOWEL TEGID EDWARDS, of Pirelli-General Cable Works, Limited, Southampton, died on February 9.

MR. FRANK HENRY TURNER, formerly a director of William Green & Company (Ecclesfield), Limited, engineers and ironfounders, died suddenly on February 8.

MR. J. H. FISHER, who had been a director of Thomas Turton & Sons, Limited, steel manufacturers, of Sheffield, since 1927, died recently at the age of 79.

MR. EDGAR KERSHAW MIDDLETON, who died on February 12 after a short illness, was a director of Walter Scott & Middleton, Limited, civil engineers, etc., of London, S.W.1.

MR. HARRY BROTHWOOD, who for many years was in charge of cupolas at the Lilleshall Company's works, has died at the age of 60. Latterly he was employed by John Maddock & Company, Limited, Oakengates, Shrops.

MR. JAMES MACGREGOR, managing director of two chemical engineering firms, Ernest Scott & Company, Limited, and George Scott & Son (London), Limited, both of Leven, Fifeshire, until his retirement in 1944, died in Glasgow on February 14. Mr. MacGregor was appointed Glasgow representative of the two companies in 1900 and, together with two colleagues, acquired control of them upon the retirement of Mr. Ernest Scott in 1915. Later, when control had passed entirely into his hands, Mr. MacGregor formed an association with Henry Balfour & Company, Limited, Leven. A founder of the Institution of Chemical Engineers, Mr. MacGregor was an authority on the subjects of evaporation, spray-drying, distillation and general plant design. For several years he represented the chemical and engineering group of the Glasgow and West of Scotland Section of the Society of Chemical Industry, and was a member of the Council of the Society.

A CLAIM on behalf of about 14,000 labourers and maintenance men employed in steelworks for a fortnight's holiday with pay has been rejected by the Iron and Steel Trades Employers' Association.

Institute of Metals' New Committee

The Council of the Institute of Metals has appointed a new standing committee—the Metallurgical Engineering Committee—under the chairmanship of Mr. D. F. Campbell, with the following terms of reference:—

(*a*) To develop interest in metallurgical engineering in the non-ferrous metal industry and to promote the study of equipment and instruments used in the industrial melting, casting, and working of non-ferrous materials.

(*b*) To make recommendations to the Council regarding the need for holding special meetings, discussions, and symposia; inviting Papers or articles for publication; or the publication of books or other literature to attain the objects for which the Committee was formed.

(*c*) To make suggestions to the appropriate committees of the Institute in connection with the organisation of special meetings or the production of publications approved by the Council on its recommendation.

Tees-side Opposition to Steel Bill

"The Iron and Steel Bill is against the interests of producers, consumers and security holders, and must from all these aspects be considered unfavourable to the commercial interests of Tees-side as a whole," states a resolution to be submitted by Tees-side Chamber of Commerce to the annual meeting of the Association of Chambers of Commerce.

Accompanying this resolution is a detailed memorandum which declares: "Examination of the facts reveals no good reason for the nationalisation of a successful industry of the magnitude, importance and complexity of the iron and steel industry. On all accounts it is without justification and is against the best interests of the nation." The memorandum states that there is every reason to believe that under nationalisation prices will go up and, in that event, the country would be faced with a grave economic crisis.

PIG-IRON AND STEEL PRODUCTION IN GREAT BRITAIN (*Continued from previous page*).

TABLE IV.—*General Summary of Pig-Iron and Steel Production.* (*Weekly Average in Thousands of Tons.*)

Period.	Iron-ore output.	Imported ore consumed.	Coke receipts by blast-furnace owners	Output of pig-iron and ferro-alloys.	Scrap used in steel-making.	Steel (incl. alloy).			
						Imports.‡	Output of ingots and castings.	Deliveries of finished steel.	Stocks.†
1938	228	89	—	130	118	16	200	—	—
1947 (53 weeks)	209	136	165	147	145	8	240	195	737
1948	252	172	200	178	174	8	286	214	1,028
1948—July	253	164	201	171	144	7	232	184	920
August	233	171	200	174	162	6	271	182	986
September* ..	273	175	202	181	183	10	297	225	1,002
October	270	175	202	183	184	13	297	223	1,004
November	264	174	205	185	187	13	303	229	1,002§
December*	253	162	201	176	173	10	282	216	1,028

* Five weeks. † Stocks at end of years and months shown. ‡ Weekly average of calendar month. § Revised.

Personal

MR. CHARLES SMITH has been appointed a local director of John Smith (Keighley), Limited, engineers and crane builders.

MR. JOHN GREEN, a director of Thos. Firth & John Brown, Limited, Sheffield, is to be a part-time member of the East Midland Gas Board.

MR. E. BROWN, commercial manager, and MR. G. A. PHIPPS, chief engineer, have been elected directors of Guest Keen & Nettlefolds (South Wales), Limited.

MR. H. W. LIPPETT has been appointed a director of Massey-Harris, Limited, agricultural engineers, of Sale, Ches, in place of MR. W. BARKER, who has resigned.

MR. W. A. ENDERSBY, personnel manager of the Chesterfield Tube Company, Limited, has been appointed welfare officer of the Yorkshire Division of the British Electricity Authority.

MR. E. W. STEELE, a director and general manager of works of Metropolitan-Vickers Electrical Company, Limited, has been appointed a director of Metropolitan-Vickers Electrical Export Company, Limited.

MR. J. G. WEIR, of G. & J. Weir, Limited, engineers and founders, of Glasgow, and builders of a 3-ton helicopter, has been elected first president of the newly formed Helicopter Association of Great Britain.

MR. J. W. WILLIS BROWN, managing director of the Lilleshall Company, Limited, Shifnal, Shrops, has retired. He will be succeeded by Mr. A. N. FIELDEN, who has been a director of the company for 15 years.

MR. A. KEATS, managing director, has been appointed chairman of Fisher & Ludlow, Limited, manufacturers of metal pressings, light structural engineers, etc., of Birmingham. He succeeds MR. E. B. BEHRENS, who has resigned owing to pressure of other work.

MR. W. F. HAMMOND has been appointed a director and chairman and MR. F. A. WARD a director of the Blaenavon Company, Limited, alloy-steel manufacturers, of Pontypool, Mon, in place of MAJOR C. D. MORRISON and MR. E. W. THORNTON, who have resigned from the board.

MR. A. C. MAIN has been appointed assistant works manager, main works, of Metropolitan-Vickers Electrical Company, Limited. MR. R. CLOUGH has been appointed superintendent of the company's switchgear department and MR. T. R. PORTER superintendent of the control and radio departments.

MR. CLEMENT HULME, who has been appointed assistant works manager of the Port Talbot and Margam Works of the Steel Company of Wales, Limited, was formerly with the United Steel Companies, Limited. He spent 13 years in the Appleby-Frodingham blast-furnace department, being associated with the starting up of the South Works in 1939 and becoming assistant blast-furnace manager at the North Works in 1940. In 1945 he took up the position of blast-furnace manager at the North Works.

National Union of Manufacturers

Campaign to Resist Nationalisation

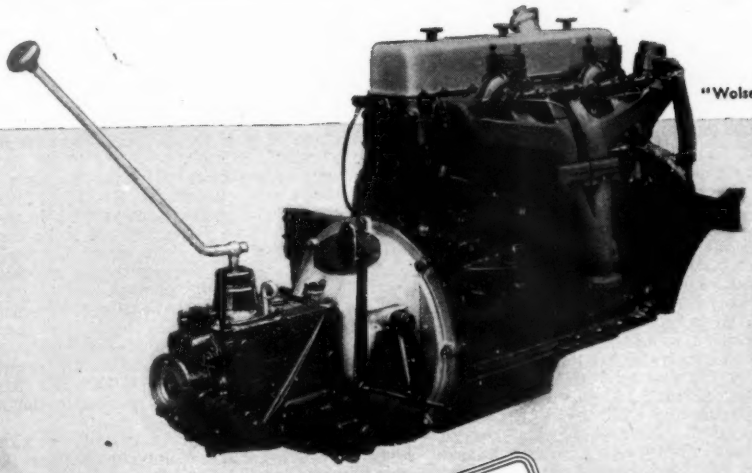
At a luncheon on February 10, Sir Patrick Hannon, M.P., president of the National Union of Manufacturers, announced the opening of a campaign by the Union throughout the country to encourage the expansion of free enterprise and to resist nationalisation. Efforts will be made by mass meetings and contact with individual managements, to extend the influence of the Union and increase its membership, especially among small manufacturers.

The forthcoming Budget, it is thought, will prove a testing time of the Government's real attitude towards free enterprise and, in the view of the Union, the time has come when British industry can reasonably look for a little recognition from official quarters in the shape of incentives and help towards the efforts that still have to be made to complete the task of economic recovery.

An article in the February issue of the Union's journal says that seldom has industry been so united on any major issue as it now is in calling for substantial changes in the incidence of taxation in order that there may be sufficient capital available to replace at a very high cost machinery which is now fast wearing out. Unless replacement at a greater rate is possible, it will, in the not distant future, reach a point that will involve two disastrous consequences; first, a great proportion of our machinery will be non-competitive in output or precision with our competitors; and secondly, the quantity then required could not be produced in a reasonable time in the light of our need for increased exports and of other commitments.

Sir Graham Cunningham, chairman and managing director of the Triplex Safety Glass Company, Limited, who was principal guest and speaker at the luncheon, said that whatever Government was in power, when the economy of the world was unbalanced there must be some kind of planning and co-ordination of the resources of the country. Planners, however, could not blue-print the workings of human beings. It was to management, allied to the co-operation of the workpeople, that we must look for the solution of our problems. Without the efforts of management and the products of private enterprise, all planning was sterile.

MR. R. LLOYD ROBERTS, head of the personnel management branch of the Ministry of Labour and National Service, announced at a conference of leading West Wales industrialists at Swansea, on February 10, that Wales was to have its own personnel management adviser whose services would be available to any firm requiring assistance through the regional controller. This adviser, Mr. Roberts said, would be willing to help particularly firms too small to employ a personnel officer and would be at the disposal of any inexperienced personnel officer. The conference, which was held under Ministry auspices, was to stimulate ideas on relationships between employers and employees.



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News in Brief

THE 37-YEAR-OLD twin-screw steamer Empire Penryn, of 6,345 tons, is to be broken up at the Blyth yard of the Hughes Bolckow Shipbreaking Company, Limited.

SHIPLEY TECHNICAL INSTITUTE ENGINEERING SOCIETY, revived last year on broader lines, now has over 200 members. The syllabus includes visits to a colliery and a power station.

MUSGRAVE & COMPANY, LIMITED, fan and structural engineers, of Belfast, announces that its Bristol branch office has been transferred to more commodious premises at 35, Broad Street.

NORRIS, HENTY & GARDNERS, LIMITED, Manchester, produced during 1948 205 Gardner marine oil engines, totalling 15,260 h.p. Of this output, 35 per cent. was shipped abroad.

A WELL-KNOWN LANDMARK in the Dudley district—the 150-ft.-high chimney stack at the Netherton Ironworks of M. & W. Grazebrook, Limited—was felled on February 9. The stack was built in 1896.

THE COMBINED TIN COMMITTEE has made additional interim allocations for the first half of 1949 totalling 11,634 long tons. They include 5,250 tons to the United States, 2,000 tons to Japan, and 1,210 tons to France.

THE U.K. SECTION of the Anglo-American Council on Productivity has been constituted a private company limited by guarantee. The members of the U.K. Section of the Council are the directors of the company, with the joint secretaries as managing directors.

BIRMINGHAM SMALL ARMS COMPANY, LIMITED, has bought a large mansion, Whiston Grange, near Rotherham, for group research. This has previously been centred at Greystones Hall, Sheffield, and the purchase of Whiston Grange will provide further accommodation.

THE POWER PLANT COMPANY, LIMITED, West Drayton, Middx, has appointed Morris Warden & Company, Limited, 90, Mitchell Street, Glasgow, C.1 (in place of the late Mr. E. G. Lowes), as its representatives in Scotland for all the company's products except machine tools.

AN ALL-TIME RECORD was achieved at the Cardiff works of Guest Keen Baldwins Iron & Steel Company, Limited, in 1948. Production of steel was 580,553 tons, compared with 489,222 tons in 1947. The labour force at about 3,000 was only a few dozen more than in the previous year.

AN APPLICATION by Joseph Lucas, Limited, motor-accessory manufacturers, of Birmingham, to lease 3½ acres of land near Castle Bromwich from the Tame and Rea Drainage Board in order to erect an engine test house for experiments of a special nature, was approved by the Board on February 11.

STEEL & COMPANY, LIMITED, electric and mechanical engineers, etc., of Sunderland, has started two subsidiary firms in Canada and the United States which, it is hoped, will result in more contracts for the Sunderland company. The new firms will handle sales, advertisements and a spare-parts organisation.

TWELVE NAVAL ARCHITECTS, architectural students and shipping engineers from Denmark, France, the Netherlands, and Norway began a three weeks' course on shipbuilding, arranged by the British Council, on February 15. The first part of the course is being held at Sunderland, and on the last 10 days, from February 21, at Glasgow.

PLANS SUBMITTED on behalf of the Lanarkshire Steel Company, Limited, for the erection of buildings in Craigneuk Street, Motherwell, for use as a power station and cooling tower in connection with the company's works have been approved by the Motherwell and Wishaw Dean of Guild Court. The estimated cost of the scheme is £33,000.

DURING THE BREAKING-UP by the Stockton Shipping & Salvage Company of the 8,000-ton British India cargo liner, Howra, the turbines of the ship were found to be in excellent condition and are to be exported to Italy to start life anew. The vessel was built on the Tyne in 1922 and was engined by the Parsons Marine Steam Turbine Company, Limited.

C. A. PARSONS & COMPANY, LIMITED, Newcastle-upon-Tyne, has secured a contract to supply the Ontario Hydro-Electric Power Commission with electrical equipment for a new power station at Toronto. The order involves between $2,000,000 and $3,000,000. Canada plans to spend £500 million in the next five years on new hydro-generating plant.

THE GOVERNMENT proposes to ratify the Convention concerning Workmen's Compensation for Accidents which was adopted by the International Labour Conference in 1925. The Convention deals with the provision of compensation to workmen who suffer personal injury due to industrial accident, and to their dependants. The Convention has already been ratified by 20 States.

SHELL-MEX & B.P., LIMITED, has reduced its prices of fuel oils to inland buyers, as from February 15, by ½d. per gall. (approx. 10s. per ton) for B.P. Britoleum, Shell heavy fuel oil and B.P. heavy fuel oil. A reduction of ½d. per gall. in the inland price of Esso fuel oil, heavy and medium grades, also effective from February 15, has been announced by the Anglo-American Oil Company, Limited.

THE CAPITAL OF the Glacier Metal Company, Limited, is to be increased to £500,000 by the creation of a further 400,000 5s. ordinary shares. The directors propose to issue 32,000 6 per cent. cumulative preference shares, the balance of the authorised capital, and 303,200 5s. ordinary shares. The ordinary shares will be offered to existing stockholders in the proportion of two new shares for every five shares held.

EASTERN EQUIPMENT, LIMITED, 212-220, King Street, Fredericton, Canada, wishes to secure the representation of U.K. manufacturers of construction machinery and equipment. Interested companies should communicate with the firm direct, at the same time notifying the Commercial Relations and Exports Department, Board of Trade, Thames House North, Millbank, London, S.W.1 (reference, E.P.D. 44414/48), of any action taken.

THE NATIONAL ARBITRATION TRIBUNAL has conceded a claim by the Iron and Steel Trades Confederation that maintenance craftsmen's mates should be paid an output bonus. The precise details are to be worked out by representatives of employers and the union, failing which the Tribunal will draw up a scheme. The

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Tribunal has rejected a claim by certain unskilled workers of Dorman, Long & Company, Limited, for an increased output bonus.

EDGARDO DIAZ, P.O. Box 122, Curacao, wishes to represent, on a commission basis, United Kingdom manufacturers of aluminium hollow-ware, enamel hollow-ware, galvanised hollow-ware, etc. Companies interested should contact the firm direct, at the same time notifying the Commercial Relations and Exports Department, Board of Trade, Thames House North, Millbank, London, S.W.1 (reference, C.R.E. (I.B.) 1954/49), of any action taken.

ENGINEERS OF Mullard Electronic Products, Limited, have returned to England after an extended business trip to Portugal, where they demonstrated telecommunications equipment before Government authorities. The equipment, which was carried in a demonstration vehicle, comprised mobile and static radio transmitters and receivers. On the return journey the equipment was displayed in France. A number of the orders resulting from the visit have already been executed.

AFTER THE LAUNCH of the motor tanker Latirus, which is being built by R. & W. Hawthorn, Leslie & Company, Limited, Hebburn, for the Anglo-Saxon Petroleum Company, Limited, Mr. H. B. Robin Rowell, chairman of the builders, regretted that there was not another ship to put down on the vacated berth. Sixty-four tankers were being built and there were still 141 to go down, of about 1,500,000 tons, but unless more steel was forthcoming, unemployment would inevitably occur.

A TEMPORARY PAY-OFF of about one-quarter of the employees has been carried out at the Newcastle-upon-Tyne works of Aveling-Barford, Limited, road-machinery manufacturers, etc. It is stated that the cut in capital expenditure by Sir Stafford Cripps had caused a falling-off in the demand for the firm's products. It had been hoped to bridge the gap by making a new product, but this is not ready yet and it has been necessary to pay off about 25 per cent. of the workers as a temporary measure.

CONSTRUCTION WORK on the new £1,250,000 mechanical engineering research station at Thorntonhall was to begin this year, stated Sir Patrick Dollan, chairman of the East Kilbride Development Corporation, in Glasgow on February 13. The site extended to over 60 acres, and it would take at least three years to complete the buildings. Research laboratories in connection with roads, fuel, building and light engineering were being reconstructed at a cost of over £35,000, and would be ready for occupation in April.

THE CHAIRMAN of Broom & Wade, Limited, manufacturers of air compressors, pneumatic tools, etc., of High Wycombe, Mr. Harry S. Broom, states that the fall in the profit of the company for the year to September 30 last does not imply a reduction in turnover. The sales were, in fact, substantially higher again than in the previous year. The reduction in profits has been due to the deliberate policy of the board to keep selling prices down while prices all round were still rising. The subsidiaries both at home and overseas continue to make good progress and group exports have continued to expand, especially in Australia and Northern Europe.

Company News

(Figures for previous year in brackets.)

WILLOWBROOK—Interim dividend of 6% (nil).

THOS. W. WARD—Interim dividend of 5% (same).

SMITH'S DOCK COMPANY—Dividend of 10% (same).

METAL INDUSTRIES—Interim dividend of 3% (same).

VONO—Dividend of 45% and cash bonus of 10% (same).

H. W. LINDOP & SONS—Interim dividend of 35% (same).

UNITED STEEL COMPANIES—Interim dividend of 2½% (same).

RICHARD JOHNSON, CLAPHAM & MORRIS—Interim dividend of 5% (same).

BRITISH LEAD MILLS—Final dividend of 20%, making 32½% (same on lower capital).

BLYTHE COLOUR WORKS—Final dividend of 30% and bonus of 30%, making 80% (same).

HUMBER GRAVING DOCK & ENGINEERING COMPANY—Interim dividend of 2% (same).

MUREX—Interim dividend of 7½% on account of the year ending April 30, 1949 (6⅔% for 10 months).

GASCOIGNES (READING)—Final dividend of 17½% (15%) and export bonus of 7½% (5%), making 25% (20%).

R. & W. HAWTHORN, LESLIE & COMPANY—Interim dividend of 5% (5% and bonus of 1%, tax free, paid from interest on tax-reserve certificates).

ELMORE'S METAL COMPANY—Following the practice of previous years, the interest on the loan owing by Elmore's Metall Actiengesellschaft has been placed to reserve and not carried to the profit and loss account. The account for 1947 consequently shows a loss of £256 for the year. This amount has been deducted from the balance of the profit and loss account brought forward from previous years, reducing the carry-forward to £11,816. The directors have waived the whole of their fees for the year.

MONOTYPE CORPORATION—Accounts to September 30, 1948, show :—Group net profit, after tax, depreciation, etc., £106,851; unappropriated profit of subsidiaries brought forward, £46,845; carried forward by subsidiaries, £69,105; parent company's profit, £94,591; investments depreciation provision written back, £3,356; brought in, £134,967; to general reserve, £10,000; pension, etc., reserve, £14,761; overseas business reserve, £14,965; research and experiment reserve, £15,000; dividend of 15%; forward, £137,049.

CLYDE CRANE & BOOTH—Gross profit for the year ended November 30, 1948, £75,280; investment interest, £1,800 gross; dividend from subsidiary, £10,149; to directors' fees, £1,550; directors' salaries and commissions, £6,393; auditors' expenses, £61; depreciation, £8,980; taxation, £15,394; net profit, £54,650 (£43,984); preference dividend, £4,545 (£4,688); cost of redeeming shares, £1,694 (£1,571); ordinary dividend of 25% (same); general reserve, £9,000 (£4,000); pensions reserve, £12,000 (£4,000); taxation reserve, nil (£6,500); forward, £18,523 (£13,411).

HADFIELDS—Full accounts for the nine months ended September 30, 1948, include for the first time consolidated profit and loss account, which shows group's trading profit £362,217; other income, £18,905; to tax, £141,301; depreciation, £77,597; directors' remuneration, £24,837; staff pension scheme, £6,120; net profit, £131,367; balance of profit on contracts completed in earlier years, £54,366; tax and insurance adjustments in respect of previous years, £7,419; brought in, £383,454; ordinary dividend of 13%, £77,093; preference dividend, £5,568; premium paid on shares of subsidiary written off, £8,750; off patents, £2,000; off patterns and drawings, £1,000; off development account, £994; forward in parent company's accounts, £411,291; forward in subsidiaries' accounts, £69,910.

INDIA RUBBER, GUTTAPERCHA & TELEGRAPH WORKS COMPANY—Consolidated trading profit to September 30, 1948, £293,267 (£264,742); other income, £1,859 (£1,513); to depreciation, £26,939 (£41,057); off tools and moulds, £20,902 (£15,897); against excess of current prices, £989 (nil); mortgage interest, £2,303 (£4,160); audit, £863 (£855); directors' fees, £3,190 (£3,298); emoluments, £2,769 (£3,275); profit, £237,171 (£197,713); plus £1,845 net freed provisions; to income tax, £79,594 (£66,503); profits tax, £26,760; E.P.T., nil (taxes £29,607); special depreciation, nil (£10,000); deferred repairs, £61,375 (£3,777); premium on mortgage, £1,876 (nil); available, £69,411 (£87,826); to contingencies, £26,984 (£17,555); general reserve, nil (£50,000); dividend on preferred ordinary shares, £6,600 (same); ordinary dividend of 9% (same); forward, £153,058 (£129,744).

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Raw Material Markets

Iron and Steel

A shrinkage in the December imports of foreign ore, amounting to rather more than a quarter of a million tons, is sufficient explanation of the delay in the expansion of pig-iron production. The starting of an extra blast furnace in Northamptonshire last month has increased the number of operative units to 103, which was the highest number worked during any period of 1948, but this furnace is, of course, working on native ore and it is obvious that blast-furnace plants which rely mainly on imported ores cannot increase their outputs until the intake of raw materials is not merely restored, but substantially increased. Coke supplies are by no means abundant and distribution of all grades of merchant iron, particularly hematite, has to be carefully controlled to avoid more serious industrial repercussions. Foundry stocks of iron are very low and most establishments are working on a hand-to-mouth basis.

There is still a considerable gap between supply and demand for semi-finished steel which has not been bridged. Further tonnages of Belgian and Luxemburg material are coming to hand, but still more is needed. Small square and flat billets are most urgently required at the re-rolling mills engaged on small steel bars, light sections and narrow strip, and there is no doubt that the output of steel sheets could be stepped up if more sheet bars were available. Larger sizes of billets, slabs, etc., are not so scarce, but any defective material suitable for re-rolling commands a ready sale.

The plate mills are operating under extreme pressure. Shipbuilders, boilermakers, structural engineers and locomotive and wagon builders are all pressing for prompt delivery of their allocated tonnages and order-books have seldom been so congested. All but the heavier sizes of joists, channels and sections are also in brisk demand, and exports could be increased if there were any marginal surpluses. Rails are eagerly sought by overseas buyers and sheets and tubes also figure conspicuously in the export lists.

Non-ferrous Metals

Reports from America that there are now some 3 million unemployed in that country probably came as something of a shock, but it has been known for some time that a certain amount of short time was being worked in the non-ferrous industry, that is, on the fabricating side, and doubtless activity in other trades, too, has fallen off. The January copper figures were published last week by the Copper Institute in New York and it is not surprising to find that another decline in activity has taken place. Production of blister copper has fallen from 64,088 short tons in December to 53,701 tons, while in refined copper the fall was even more marked—from 96,117 tons to 78,298 short tons. Deliveries to domestic consumers, which in December were 102,292 tons, have fallen to 96,070 tons, and stocks, too, have declined by about 5,000 tons to some 91,000 tons at January 31. Additions made to the stockpile during January have not been stated, but it must be presumed that the producers found something for the strategic reserve.

In the United Kingdom, business in non-ferrous metals, although still good, shows signs of having passed the peak, and it would seem that the extrusion section of the trade, in spite of price reductions, is feeling the lack of demand rather acutely. This is doubtless one of the reasons why scrap to-day is so cheap, for buyers' needs are quickly satisfied and there is still a lot of secondary metal coming on to the market. In this matter of scrap-metal disposals the Ministry of Supply is well to the fore with sales by tender of surplus war material of which very large quantities appear still to be available. It was reported recently that an end to this large reservoir of secondary metal would be reached in the early months of the present year, but it must be admitted that there is no sign of that point being reached. It is believed that big dumps still exist and that material is constantly arriving at these sites, presumably from depots where breaking down is in progress.

Simplification of Export Forms

The President of the Board of Trade (Mr. Harold Wilson) announced in the House of Commons recently that the Working Party on Export Forms had now completed a report on the second stage of its work—the examination of the forms required by shipowners, port authorities, banks and similar organisations in the United Kingdom. The Working Party examined seven major groups of forms, and was able to make recommendations for some simplification of procedure in respect of five of them. The Government departments concerned were arranging for early discussion with shipowners, banks and others of the modifications to their present practices which would be necessary to make the recommendations effective.

He hoped that the bodies concerned would find it possible to carry out the recommendations without delay, thus easing the task of "form-filling" for our exporters. The Working Party had now entered on the third stage of its inquiry—the examination of the forms required by overseas Governments, said Mr. Wilson.

British Engineering Products in Canada

Mr. Harry Gilpin, who was knighted in the New Year Honours List, told the Gauge and Tool Makers' Association last week that the suggestion made in the report of the Gilpin Engineering Mission to Canada that Government assistance should be given to small British firms which band together to appoint fully qualified technical investigators in Canada, had been accepted by the Government in principle. Details for its enactment were being considered. Speaking at a luncheon of the Association, Mr. Gilpin said that the essentials for successful entry into the Canadian market were market survey, information, representation, quality, price, delivery and servicing. It was his opinion that there was in Canada an important, stable and probably growing market for British engineering products.